DOCUMENT RESUME

ED 199 921 EA 013 437

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TITLE A Consultant Study of the Singapore American School Facilities.
PUB DATE 14 Jan 81
NOTE 60p.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Elementary Secondary Education; *Enrollment Projections; *Facility Expansion; *Facility Planning; *Facility Requirements; *Facility Utilization Research; Foreign Countries; Long Range Planning
IDENTIFIERS *Singapore American School

ABSTRACT

Designed to provide assistance in planning short- and long-range solutions to alleviate overcrowding in elementary and middle schools belonging to the Singapore American School, this study gives an overview of the geographic, political, and economic factors affecting enrollment and provides a detailed analysis of the schools' facilities. The schools anticipate continued enrollment growth. To accomodate such growth, the study recommends several short-term measures that involve reorganizing the use of existing structures or renting additional space. Long-range recommendations include providing open enrollment for all eligible students, purchasing or constructing a building to house expatriate teachers, and constructing a new elementary school. The author also suggests educational specifications for the new school plant. (Author/WD)

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A CONSULTANT STUDY

OF THE

SINGAPORE AMERICAN SCHOOL FACILITIES

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January 15, 1981

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SINGAPORE AMERICAN SCHOOL

ADMINISTRATION

KINGS ROAD CAMPUS

Superintendent	Dr. Richard A. Lyden
High School Principal	Dr. Ronald Platt

ULU PANDAN CAMPUS

Elem./Middle School Principal	Mrs. Helen Johnson

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A CONSULTANT STUDY

OF THE

SINGAPORE AMERICAN SCHOOL FACILITIES

Preface

The consultant from Miami University, Oxford, Ohio, U. S. A., under an informal contract with the Singapore American School has reviewed identified problems in the school including:

(1) an analysis of the facilities, and

(2) a review of projected enrollment increases.

Recommendations for action for the short term and the near future for the school have been formulated. They will become an integral part of the deliberations of the Board of Governors, the professional staff and the American community.

In general, the report contained herein speaks to the total school plant needs of the school for the foreseeable future, the extent to which the existing school plant facilities are adequate, the school plant improvements needed to implement projected student enrollment, and where applicable, reasonable alternatives with rationales for each.

The consultant wishes to express his appreciation for the time, effort, and cooperation of all persons involved in the study. I am particularly indebted to Dr. Lyden, Mrs. Johnson, Mrs. Leister, and Dr. Platt for their frank opinions and sharing of information. The superintendent answered all of my concerns and volunteered information

necessary to the completion of the study.

The Board of Governors is to be commended for its foresight in seeking an analysis of the school facilities during a time when enrollment increases are imminent and the value of education for the children continue to be important to the American community in Singapore.

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A CONSULTANT STUDY OF SCHOOL FACILITIES

FOR THE SINGAPORE AMERICAN SCHOOL

In November, 1980, a consultant was contacted by Dr. Richard Lyden, Superintendent of the Singapore American School to provide assistance in planning short-range solutions to help alleviate pupil over-crowding in the elementary and middle schools. A further charge was to focus attention on the long-term problem of projected pupil increases anticipated by the Singapore American School.

A proposal was written by the consultant and submitted to the superintendent which was subsequently accepted as the basis of a verbal contract to conduct an on-site study of the school facilities in Singapore. Specifically, the task of the consultant is to make recommendations pertaining to the housing of elementary students for both the immediate short-term and for long-range projections.

Introduction

The primary purpose of school sites and facilities is to provide proper housing for students and faculty in the total educational enterprise. Obviously, the development of the present plant since its inception in 1956 has been conditioned by many factors.

Certainly it was not anticipated that twenty five years later a school would be in existance housing approximately 1800 students.

Prescriptive answers to the long-range possibility of continued growth are not easily found. Consider, if you will, the unique characteristics of the school and the problems attendant to a facility that are largely conditioned by the political and economic fortunes of American business and industry in Southeast Asia. The following factual evidence seems to reflect the present state of the Singapore American School:

1. The school is populated by Americans and foreign nationals working for the American business community.

2. The elementary school is reportedly at capacity, with a waiting list of pupils wanting a place in the classroom. Projections seem to indicate a substantial further influx of students into the system.

3. Students other than from the American business community actively seek placement in the school.

4. Throughout Singapore, there is an increasing demand for English language education.

A historical review of the school reveals a pattern of pupil growth until the peak year of 1975-76 at which time a dramatic decrease of student population occurred due mainly to the retrenchment of oil companies throughout Southeast Asia. Now in the year of 1981 the school is again experiencing enrollment increases with more students to come. Instability of widely fluctuating student population can and does cause severe problems for the school. Changing staffing patterns due to enrollment changes are a direct reflection on the

quality of education. Low enrollments cause immediate financial difficulty for the school. Over capacity causes a whole host of problems of morale, staffing, space, parental concerns, and student achievement. Obviously, one of the main concerns of this consultant is to seek solutions that will allow the school to operate in a highly efficient and stable environment with a stated maximum student enrollment. It would be desirable to envision a school plant with sufficient flexibility to accommodate the anticipated rise and fall of student enrollment.

Planning Difficulties

Singapore, with a present population of 2,500,000 people and an approximate area of 364 square miles, is already a densly populated city. How much additional growth can be anticipated in the next two decades? At the present time American firms are being actively recruited and given encouragement to invest in Singapore through tax incentives and other hard-sell approaches. As a result, American firms have poured millions of dollars into the Singaporean economy with more on the way. American firms mean American families, and families have children that want a quality education. One might wonder what would happen to the large American community if politics brought a new leadership to Singapore and a change of attitude toward Americans. Admittedly, past history and present indications are very favorable to the continued American presence in Singapore. One does, however, need to be cautious when planning for additional permanent facilities.

The School Facilities

Introduction

One of the principle motivations for the current study is the realization that new planning steps cannot be taken without some knowledge of the existing facilities. Teaching and learning facilities must be the type and quantity required to accommodate both program and enrollment. Yet, if the facilities are to advance the teaching and learning process, their quality is equally important. Environmental factors which affect basic human senses - visual, sonic, thermal, tactile - are obviously important. This appeal of individual facilities on an entire site setting are closely related.

It may not have been deliberate but the two campus settings for the Singapore American School seem to have a dominant theme. This is established through the use of architectural style, building arrangement, natural features, and a blending of the interior rooms with the outdoor space. The different motifs of the two campus locations have provided an environment enabling people to identify with the school.

Adequate facilities are necessary if the school wishes to provide a quality education program for its children. Present facilities must be examined to learn how they can best be utilized in any

plan for the future building programs.

The buildings and site of the Kings Road campus were not analyzed to the same extent as those at the Ulu Pandan campus. It was recognized that a master plan completed in 1976 for the Kings Road campus facility and the immediate need for building expansion is not critical. The Pei Tong school and site were examined and appropriate comments are included in this chapter.

A good share of the consultant's time was spent on the Ulu Pandan campus; examining the facility and site, and placing in perspective the present structure as it relates to the program, and steps necessary to the anticipated enrollment increases.

What follows then is a brief analysis of the facilities.

Kings Road Campus High School and Administrative Offices

The first building opened in 1962 with the remainder of the facility being completed in two additional stages. The facility is constructed of reinforced concrete with a pitched tile roof. The architectural design of this building has resulted in minimal maintenance problems. Some renovation changes and improvements have been made over the years. Two improvements that are readily apparent are (1) the conversion of instructional rooms to the administrative suite and (2) adding suitable covered walkways for movement of student traffic along the perimeter of the buildings.

The school plant is located on an approximately 8.2 acre site. Expansion of the site would be virtually impossible. The one possibility would be the west school boundary.

The cost of purchasing the existing houses and site development expenditures would make this a questionable alternative.

The total educational program would be greatly enhanced by having available a more suitable auditorium for student and community use, a gym to accommodate competitive sports, and additional playground space.

The Building and Grounds office is located in an old building that formerly housed the headmaster. Storage space for equipment and supplies is critical for this operation. Please note that some savings could be effected by having additional space to store chemicals and materials bought in large quantities.

In summary, it can be said that the high school is a functional and useful facility, with sufficient capacity to accommodate the secondary student population in the foreseeable future.

Capacity and Enrollment

The present facility accommodates twenty general purpose classrooms, four science rooms, seven special rooms, one gym, a library, administrative space, faculty lounge, cafeteria, and various service areas. The principal estimates the maximum capacity at 600 students. The present enrollment is 520. While this figure fluctuates throughout the year, the student population has remained relatively stable and well below the stated capacity.

The program is conducted as an eight-period day with each teacher assigned three planning periods each day. For a general classroom this translates into a room utilization factor of 62.5

percent. In most high schools, classrooms will be in use 85 percent of the time. Correspondingly, special room utilization is much lower than general purpose classrooms in both this school and the usual high school. Obviously, the Kings Road High School could increase the capacity by:

(1) increasing the number of pupils per class,

(2) preparing a schedule that would reflect a higher classroom utilization factor,

(3) designating the seven special rooms and the gym as a part of the capacity formula. This is not to suggest, under the present circumstances, that this step is necessary or desirable. In a crisis enrollment situation, the facility could accommodate 800 students.

Pei Tong School at Clementi Park

This government-owned educational center and recently closed facility has been offered to the Singapore American School for possible use. The consultant had an opportunity to examine the interior and exterior of the building as well as the site on which the facility is located. The topography of the small site does not lend itself to development of a completely satisfactory play area. One could also question the advisability of expanding the size of the present building due to:

(1) encroachment upon the space of an already limited site,

(2) addition of new construction to a sub-standard structure,

(3) insufficient parking space for staff and visitors.

A recent memo to Helen Johnson from a group of teachers who

had examined the building, made it abundantly clear that little enthusiasm was expressed for possible use of the facility. The cost of renovation would not justify short-term use, and it would be my judgment that the site and building should not be seriously considered as a viable option, by the Board as it plans for long-range facility development.

Capacity

The building has eight classrooms ranging in size from approximately 540 to 600 square feet per room. The building could accommodate an absolute maximum of 180 students, but a preferable head count of 150 would be more reasonable. Overcrowding would result in any excess of students beyond the stated number. Site renovation would provide adequate space for pre-kindergarten, kindergarten, and first-graders. Use of this facility would require the assignment of an assistant principal to administer the program.

Ulu Pandan Elementary - Middle School Campus

The educational center located on Ulu Pandan Road presently serves pupils in kindergarten through grade eight inclusive. The major thrust of the program is a continuous progress plan with pupils housed in open space hexagonal learning communities.

The three story reinforced concrete structure was architecturally designed to take full advantage of the warm climate and prevailing breezes through combined use of closed air-conditioned rooms and breezeway arrangements. The building design permits

optimum flow of student traffic throughout the building. The facility presents an eye-pleasing environment and the building elevation puts it above the traffic arteries bordering the school on the north and east, thus providing insulation from street noise. Unfortunately, the continuing development of housing units to the south will bring additional traffic to the area and noise pollution will increase. It should also be noted that the striking beauty and design of the structure, once so prominent to behold, will soon be all but submerged with the encroachment of a high-rise housing complex adjacent to the site on the south. By any standards, the facility is located on a small site.[1]

As a consequence, outside facilities for play areas, ball fields, and other large muscle activity is minimally adequate to take care of peak pupil enrollments. The biggest problem of pupil overcrowding occurs during the extended lunch period and more particularly on rainy days. The total facility is a well-designed, attractive, and highly functional building well suited to the program being followed. It is a credit to the architect that the building can accommodate a large pupil population due to the design of the building which allows for a free flow of pupil traffic in and among the various learning communities. The lunch-room would be an impossible situation without the circular and cross flow pattern of

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[1]Recommendations of the Council for Educational Facility Planners for elementary schools specify a minimum of ten acres plus an additional acre for each 100 students; and for middle schools, a minimum of twenty acres plus an additional acre for each 100 students.

pupil movement. Rainy days, bringing pupils under cover, result in congestion in the immediate vicinity of the cafeteria.

The kindergarten program is presently housed on a temporary basis in two quonset buildings located adjacent to the west side of the main structure.

Capacity and Enrollment

The rated capacity of the building, as visualized by the architect and school officials at the time of its construction, apparently was believed to be approximately 1200 students. This figure is the result of multiplying eight learning communities times six class rooms times twenty five. Enrollments have fluctuated from a low of 812 to a high of 1355 students. The present enrollment is 1090, excluding kindergarten which are presently housed in the quonsets. Based on school building capacity standards, a range could be calculated for this facility from an ideal 960 students to 1200 (20,22,25 students per pod). Obviously, the present enrollment is at the limit of the standard for 22 students per pod. In no case does any of the learning communities (six pods) exceed the 25 per pod maximum suggested capacity standard.

Swimming Pool

The swimming pool which opened in October is a welcome addition to the school and adds instructional and recreational options for the students and the American school community. Unfortunately, the pool contains no underwater lighting which limits its use to a

day time activity. It also has limited storage capability for equipment necessary for competitive and various forms of aquatic demonstrations. Changing rooms are adequate to accommodate class instruction but after school activities involving large numbers of children and adults overtax the facility. Since the pool is considered an instructional station, an office should have been provided for the staff. One additional improvement the administration and Board may wish to consider is providing sun protection covering for the spectator area located on the north side of the pool.

Library

This well designed and functional space is suitably located on the second floor adjacent to the administration offices. Access is easily gained from the learning communities throughout the building. The integrity of the library should be maintained. No further encroachment should be made upon this space. For example, the professional collection room has been assigned to one of the reading specialists for instructional use. The size of the staff and large number of pupils in the Ulu Pandan building makes it imperative that this valuable materials resource center continue to serve as a learning hub of the school.

Music Rooms

These two rooms of approximately 1600 square feet of space each are well located for vocal music and band. No problem is anticipated for the continuation of their present use.

Gymnasium

This very adequate facility is well designed to accommodate a comprehensive program of physical education instruction for the Ulu Pandan school. Its location provides ease of access to the outside playground areas. The recently opened swimming pool complements the physical education program and provides breathing room for scheduled activities in the gym. During after school hours the gym is used by the high school for basketball programs. Locker and shower room facilities are very adequate. Storage equipment and materials space is limited due to one auxiliary room being used for storage of materials extraneous to the physical education program. One major and continuing problem is maintenance upkeep of the floor.

The present student population can be handled without too much stress except on days of inclement weather, thereby necessitating indoor activity for all of the scheduled classes. Additional enrollment growth due to a result of possible expanded facility development at this site would place a burden on the present facility.

Staff Lounge

This room is used primarily for the professional staff as a lounge and is provided with furnishings to permit eating lunch, as well as small informal group gatherings. The room is often used as a meeting place for parents and children new to the school for orientation meetings.

It is important that teachers have a designated space to seek relief from continual contact with children and insulation from the noise of school activities. Only in an emergency situation should this space be designated for other than its present stated purpose.

Theaterette

This space provides an opportunity for students to engage in drama presentations and other school productions. It is also used on occasion as a teaching station for the primary physical education program and for teacher meetings and other group activities. Total utilization of this space is low in comparison to other rooms in the building.

Cafeteria

This delightful space, cooled by the prevailing breezes, is one of the outstanding features of the total school design. Access is available from three sides for the two serving lines. The pupil traffic flows in and out of the area in a circular fashion resulting in a minimum of traffic congestion at any one point. Any kind of substantial increase of students in the school would create a condition of critical proportions in the cafeteria unless the already long lunch period was extended.

The Quonsets

The two quonsets located near the southwest corner of the main structure presently house the kindergarten program. This space is quite adequate to accommodate, on a temporary basis, the present

enrollment of 86 children. There is currently one room not being used with approximately 730 square feet of space. As a temporary measure, this room could be assigned to house a pre-kindergarten program.

While the space is serving a very useful purpose, it should be viewed as a temporary instructional building. Eventual removal of the building from its present location would provide additional play area. The other favored alternative would be the assignment of this building to Buildings and Grounds for their use.

Additional Comments

The Ulu Pandan building has a number of identifiable problems:

(1) A major and costly recurring problem is a result of the electrical wiring installed at the time of construction. Aluminum cables were installed below ground and joined with the copper cables used throughout the building. This combination of wiring has resulted in extreme problems of maintenance. To replace the aluminum wiring would necessitate tearing up the building floor at a considerable cost.

(2) Settling cracks are obvious around the building and are beginning to cause some problem of water leakage.

(3) The roof has presented some problems and will continue to constitute a maintenance expenditure.

(4) The wood beams used in the outside corridor areas are beginning to deteriorate and will become a critical problem in the next few years.

At the time major repair is necessary, it would be advisable to consider a protective cover on levels one and two. This would provide additional space for play activity during periods of inclement and extreme hot weather.

(5) The design of the building required an unusually large number of expansion joints. The aluminum sheathing covering these joints have stressed to the point of causing water leakage. Water leakage is also in evidence around windows and adjoining structural members. This is probably due to the flat roof.

(6) Plumbing problems, particularly on the first floor, are becoming more prevalent.

(7) Installation of a sub-soil pipe drainage system on the athletic field would help alleviate the annual problem of excessive water and soggy field conditions during and immediately following the rainy season. It is believed that the cost of completion for the project would not be excessive.

Summary

The Ulu Pandan facility is a beautifully designed structure which accommodates itself in a highly functional way to the purposes of a continuous progress instructional program. It is also designed in a manner to handle with ease the large pupil population contained within the building. Unfortunately, the building design has created the host of problems indicated above resulting in high maintenance costs. It is interesting to note that Mr. Foong[1] estimates an annual maintenance cost ratio of 3 to 1 greater than the Kings Road high school. Major repairs to the roof and electrical system are additional expenditures not experienced at the other building.

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[1]Mr. Foong is the Director of Buildings and Grounds for the Singapore American School.

Ulu Pandan

The Present Situation

The building was designed by the architect with a capacity for 1200 students. During the years, since the school accepted its first occupants, the enrollment has fluctuated. This resulted in periods of time when rooms have stood empty and at other times, such as 1976, when the enrollment peaked at 1334. It became necessary to take drastic steps such as limiting enrollment, changing enrollment policy, and resorting to temporary housing of students.

At the present time enrollment in the main structure (excluding the quonsets) is 1090. This represents 90.8 percent of the stated capacity (1200) of the building. Capacities are relative and must never be simply considered in numerical terms of available square feet. School building capacity is a potential rather than an exact static or fixed sum. The number of pupils who may be accommodated in a building varies with school policies and procedures. What started out as the ideal program concept in 1972 becomes modified during the intervening years due to

(1) changing program concepts,

(2) pressure to introduce new elements of instruction into the curriculum,

(3) staff and administrative changes in the school,

(4) expectations for the school from the American community.

Most of these influences are of a positive nature. There may be a few instances when certain individuals attempt to serve their own self interest to the detriment of the children and program.

The present administration is faced with a dilemma. Enrollments are rising, staff has been increased to accommodate the special needs of children by adding special reading teachers. There is also increased emphasis for foreign language instruction. This situation is not unusual and it can be anticipated that in the next few years other needed curriculum interests will be begging for a place in the school. For example, computer instruction and all kinds of electronic communication is making itself felt in stateside schools. No one connected with the school wishes to decrease the fine quality education now being offered; to the contrary. one should always be alert to opportunities for doing even better for our children.

The present enrollment in the school could be increased to a greater maximum number of pupils. There are presently rooms in the building without full-time use. Judicious scheduling and shifting of teachers could free even more space, and finally certain program elements could be de-emphasized. Obviously, when such steps are taken, you pay a price such as

(1) the quality and depth and breadth of program is affected,

(2) teacher morale suffers,

(3) incidents of student discipline increase,

(4) an antagonistic attitude between teachers and the administration develops,

(5) the public relations between the community and the school begins to deteriorate.

Both the present administration and the teachers are willing to risk some of the above and to cooperate in the short-term to promote the best interest of the children involved. Unfortunately, it sometimes happens that the short-term accommodation becomes the long-range solution. This must not happen for the Singapore American School. The Board must carefully consider all available evidence of an anticipated projected increase of American families in Singapore and Southeast Asia, and act with dispatch to plan facilities accordingly.

The Pre-Kindergarten Program

Much discussion concerning the pre-kindergarten program has occurred and continues to demand the attention of the school administrators. The program was started in 1977 to help alleviate the enrollment decline in the K-8 grades. The program was offered for three years and dropped at the end of the 1979-80 school year for lack of perceived space. Considerable pressure is building in the American community to re-establish the program.

Before a decision can be made, a number of key questions need to be resolved:

(1) Is it really necessary to provide this experience for the American community?

(2) Will it enhance the educational opportunities for those enrolled and provide a smoother transition to kindergarten?

(3) Will the benefits of an improved public relations with the American community be worth the probable extra costs of offering the program?

(4) Will sufficient numbers of children enroll to justify its existence?

Enrollment projections for a pre-kindergarten program seem to be even more uncertain than for the K-8 program. Possible solutions for the short-term seem to cluster around these possibilities:

(1) Investigate the possiblity of securing space in a nearby private school or church,

(2) Investigate the possibility of leasing space in a nearby building or house,

(3) Limit the enrollment and utilize the unused room in the quonset.

In any event--if the decision is made to reinstate the program--it is recommended that the activity be maintained on a self-sustaining cost basis. It is recommended that long-range planning include space in a new facility to offer the program.

School Population Growth and Admission

The future of the Singapore American School depends entirely on the accuracy of the data being gathered and examined by school authorities and the Board. Decisions ultimately will be based on the degree of confidence one has for a now sizeable American community in Southeast Asia -- and its projected continued presence. Concerns that need study cluster around such considerations as:

(1) the number of American families, size, and age of the children,

(2) other expatriate populations in Singapore,

(3) development of a communication system to insure an accurate input of information regarding Americans and other nationals movement in and out of Singapore.

Information available to the consultant and conversations with responsible individuals clearly indicate a positive trend for continued growth of the Singaporean economy which includes Americans and other expatriates. A recent paper titled "Summary of Exploration Activity-Southeast Asia"[1] portrays a picture of expansion of the oil industry. This prognosis is important since a significant number of children in the American school are a result of the oil interests of this entire area.

The other related aspect of this discussion is simply one of admission to the American School. The three possible categories of students are:

(1) Americans,

(2) expatriates working for the American business community,

(3) any expatriate student wishing an American education.

It has to be recognized that the uniqueness and instability of the school population will probably always result in an admission policy that must remain flexible and subject to change as conditions may warrant. Ideally, one must strive for as constant a policy as possible to insure a continuity of quality education as well as keeping faith with the school patrons and their expectations for admission.

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[1]Prepared by Mr. Anderson, Singapore American School Long-Range Planning Committee.

Planning to Accommodate Increased Pupil Enrollment

The following recommendations suggest action consistent with the discussion of facilities in the early portion of this report and the anticipated growth of the American school. The recommendation will address the utilization of the existing space, the need for additional space, and finally, the feasibility of constructing new space to accommodate increased enrollments. As a prologue to the specific recommendations, it is the consultant's judgment that the current perceived short-term problem can be met with space now available in the two schools and the quonset area. This short-term need depends, however, on not changing the current admission policy which admits only passport carrying Americans to the Ulu Pandan campus school and probable continuation of not admitting pre-kindergarten children. It should be noted that during my brief visit, the administration has taken steps, through different scheduling arrangements and room assignments, to better accommodate the current increased enrollment. It should be emphasized again that temporary adjustments taken now must not, in time, be considered solutions in lieu of long-range planning for new facilities.

Each of the recommendations should receive careful consideration by the administration and the Board of Governors. Those who take part in the deliberation -- how to best utilize the existing space, and what space to construct -- should consider all aspects of the problem from a total school perspective.

Short-Term Recommendations

In essence the short-term recommendations reflect an attitude of quality vs. quantity or at least some compromise of the extremes of the two positions. Is it better to maintain an absolute high standard of quality education by limiting enrollment, or is it more important to accommodate the American business community by continuing to squeeze in pupils as they arrive?

The following recommendations are listed in order of importance:

(1) Keep the present admission policy of admitting only American citizens to the Ulu Pandan school. Further, delay accepting pre-kindergarten children until additional new facilities are completed.

(2) If the enrollments (American citizens) at Ulu Pandan begin to greatly exceed 1200 pupils, the following steps should be considered:

a. Rent or lease space in a building to house the present central administrative office.

b. Move the Kings Road school library from its present location to the vacated administrative office space.

c. Transfer the kindergarten program from Ulu Pandan to Kings Road to occupy the present library space.

d. Utilize the quonsets as needed for the overflow of students at Ulu Pandan.

The rational for the recommendation is simply one of cost factor and a minimum disruption of the educational program. Appropriate space (approximately 5,000 square feet in the present administration unit) might possibly be rented, for an estimated three dollars or less per

per square foot cost, in an office type building located in the vicinity of the two schools. It is my judgment that far less than the present 5,000 square feet of space for administration in the short-term would be required, thus reducing the cost of a leased unit of space. Implementation of this recommendation would provide security for the students in a familiar setting at one of the two schools. It would also provide the continued advantage of receiving the maximum benefits of instructional support services of the two schools.

(3) Recommendation two should be implemented with the start of the 1981 fall term, if any of the following conditions should occur:

a. Pre-registration and enrollments of American students continue to mount.

b. The Board decides to change its present policy in the short-term to include expatriates working for the American business community.

c. The pre-kindergarten programs are reinstated.

(4) Renovate the Pei Tong school to house the kindergarten program and additional grades as needed. An absolute maximum of students to be housed should not exceed 180. A preferable number of 150 would be more reasonable. (See also Page 7 and 8)

(5) Relocate the eighth grade in the Kings Road high school. While the high school could accommodate the present enrollment of 132, it would cause problems of distress for the secondary teachers. Even more damaging would be the destruction of the learning community program concept for those students moving to the high school.

Long-Range Recommendations

In planning for the educational facilities long-range, it must again be emphasized the problem of predicting, with any certainty, what will happen to the planned student population. This is not an easy task. Data collected to date, conversation with both short and long-term residents, and my own observations have resulted in a somewhat hazy picture of what the real potential for the growth of the school will be. In the absence of hard data and the consultants own inability to completely understand the economic and political implications in Southeast Asia, now and into the future, a position of cautious optimism will prevail in my recommendations. These will include:

(1) two general statements,

(2) recommendations for the Kings Road campus,

(3) recommendations for Ulu Pandan.

General Recommendations

(1) Provide an open enrollment for all eligible students, pre-kindergarten through grade twelve, requesting admission to the Singapore American School. They would, of course, be expected to meet all of the entrance requirements and conform to Board policies regarding levels of achievement, etc. One of the most positive features of the American school is providing an opportunity for children of many diverse cultural backgrounds. Value for the many cultures has been recognized and should continue in the design of new facilities and planning programs for the future. It is

interesting to note that Dr. Paul Orr, Dean of the College of Education at the University of Alabama, in a recent publication stressed the value and importance of including students of diverse cultures in overseas achools. An open enrollment policy would be less likely to be affected by the fluctuating increase and decrease of students now occurring each year. Evidence seems to suggest a greater stability for length of stay in the school among non-Americans. An optional alternative to the open enrollment is a proportionate quota system to maintain a higher balance of American students.

(2) One of the major cost factors of supporting the American school in Singapore is associated with personnel. This is not different than any school system in America, but what is unique is the expense of housing the professional expatriate staff. The housing subsidy provided for teachers, in most cases, does not cover the rent. As rental costs continue to increase each year, the discrepancy of support and cost to the teacher will widen. It is recommended that the Board consider the purchase of an apartment building or construct a facility to accommodate the housing needs of expatriate teachers.

Kings Road Campus High School

While the major portion of the consultant's time was devoted to the Ulu Pandan school and its attendant problems, one cannot ignore the total educational enterprise and the inter-related parts as they impact one upon another.

Studies over the years have been made of the Kings Road Campus School and as recent as 1976, a Master Plan was prepared by a local architect for long-range development at that site. Following are recommendations that, in part, support the Master Plan concept:

(1) Review and up-date the Master Plan prepared in 1976. Further, initiate a policy process which would allow the plan to be reviewed annually as may be warranted by changing economic conditions and enrollment projections.

(2) As appropriate and when the quonsets become available at the Ulu Pandan campus, re-assign the Buildings and Grounds operation from the Kings Road campus. This would provide much needed space for equipment and the storage of chemicals and supplies.

(3) When appropriate and in consort with the Master Plan and the Long-Range Planning Committee recommendations, raze the headmaster's house to gain space for other needed facility development on the campus. The Plan recommended a new auditorium and student related activity space to better serve the purpose of the total school program.

(4) When the present auditorium becomes available as a result of recommendation three, consider renovating the space to provide an additional four classrooms. This would allow for an increase of 100 students in the high school. Lowering the ceiling, adding the necessary room partitions, relighting the spaces, redecorating, and adding a covered walkway to gain access to the rooms would be the major extent of the renovation costs.

Be reminded that all recommendations pertaining to the Kings Road school have a lower priority than the Ulu Pandan situation. One could anticipate, however, that an increase in enrollment for the elementary-middle school would suggest a proportionally higher enrollment in the high school. See Appendix B.

The Ulu Pandan Situation

Many variables have been discussed, or at least alluded to, throughout the report that reflects the uncertainty of planning new facilities. No matter how good the planning, many unpredictable situations could happen which in a few years would find the American school with empty classrooms. If one does not build, the contingent measure results in a more intensive use of classroom space in the existing facility, resorting to double sessions, or implementation of the short-range recommendations discussed earlier as the long-range solution. This consultant senses that none of the possible alternatives to new construction are acceptable.

Adequate space for learning is very important. The type of activities which are necessary during the first years of a child's education require more space than later. The school staff and members of the Board recognize and support a quality education. The fact that a consultant was brought in to examine with the staff and Board facility development is a strong indication of a willingness to maintain the highest possible level of educational opportunity for the children associated with the American business community.

A New Facility

A new facility is needed to meet the anticipated enrollment increases and to permit adoption of an admission policy that meets the expectations of the American business community.

It will be imperative that when a new building or addition is planned, the greatest amount of flexibility possible be provided in order to allow for enrollment growth and changes in the instructional program. Ideally, the space would be designed in a manner that would permit at a minimum cost conversion of the space into office, apartments, etc., as may be dictated by unanticipated enrollment declines.

Each of the alternatives should receive careful consideration. The pros and cons of the location of the new facility should be deliberated, but ultimately a decision should be reached so that planning and construction can begin soon.

(1) A new elementary unit should be constructed on a campus site at a location in the general vicinity of the Ulu Pandan school.

It is suggested that consideration be given to a building housing pre-kindergarten through grade two. A new facility to accommodate 400 pupils which is also "expandable" on the basis of planned phasing of the construction of the building as needs may become apparent for continued future enrollment growth. This would ease the burden of the anticipated overcrowding of the Ulu Pandan school. The new facility would be a satellite school to the Ulu Pandan building with an Assistant Principal reporting to the Principal at Ulu Pandan.

The new facility will provide for:

a. Sufficient general classroom space to accommodate 50 pre-kindergarten and 100 kindergarten children on half-day sessions and 260 first and second grade pupils. The space would be flexible, not only to provide for instruction in the typical classroom sense, but also will provide for large and small group instruction which is so essential to the learning community concept as the accepted program for the Singapore American Elementary School.[1]

b. A library-resource center which is more than the traditional school library. It is suggested that an area in this space could be assigned as a teaching station for a special reading teacher.

c. An activity room large enough to accommodate a physical education program appropriate to young children. The typical large gym necessary for an elementary school program is not needed for the satellite unit.[2]

d. A lunch area should be designed in the manner of the Ulu Pandan school that allows for maximum circulation of pupils to and from the instructional spaces. It is suggested that lunch be prepared at the Ulu Pandan school and brought daily to the new facility. The alternative, obviously, is the inclusion of a cafeteria.

e. An administrative office and space to accommodate a secretary, waiting room, and a nurse station. A faculty lounge should be provided which could also be used as needed for special meetings, orientation of new pupils and parents, testing, etc.

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[1]The Board may decide that a larger school would be a more appropriate answer to perceived enrollment increases.

[2]In view of the extended day, after-school activities necessitating playground space and gymnasium facilities may give cause for the Board to consider including a full gymnasium instead of an activities room.

f. Rest rooms, sufficient space for custodial storage and instructional and administrative materials and supplies space should be included throughout the building.

Because of the possibility of a continuing expansion of the education program due to enrollment increases, it is recommended that a minimum site of five acres, plus an additional acre for each 100 pupils be provided for the new building. It is extremely important that the maximum amount of land be obtained for the school site in order that sufficient playground and building space is available. This additional playground area would provide much needed land to supplement existing play areas at the other two schools. It becomes even more important when one considers the extensive after-school program for the American school community.

In considering the orientation of the building, it is suggested that a single story structure with all facilities on ground level is to be provided. The building should be located near the front edge of the site in order to provide both maximum and open playground space in the rear of the building. A single story structure would provide maximum safety for young children and provide optimum access to the playground area.

Prior to the construction phase of the building; a committee of teachers, administrators, and board members would want to develop a set of educational specifications. The function of educational specifications for school construction can be reduced to very simple terms. The job is to facilitate creation of school facilities which perform well--nothing more. See Appendix C.

The actual designing and selection of construction materials rests with the architect. It is important, however, that the educational specifications be clearly stated and specific enough so that the building will reflect the intent and purpose of the intended program.

Why would the consultant recommend a new site for construction of the new facility? It is simply a matter of space. By all standards, additional construction of facilities at Ulu Pandan or Kings Road would further crowd already limited sites. Further, if additional building space is required in the future, expansion at a new site could be accomplished without undue hardship.

The Alternatives

Alternative I

The alternative to a new building at a site separate from the Ulu Pandan or Kings Road school is construction of a new unit on the present Ulu Pandan site. There are some obvious advantages for such a decision:

(1) preservation of the presently constituted program;

(2) the integrity of the building design could be incorporated into the new addition;

(3) support instructional programs would be more readily available;

(4) children would continue to be bused to the same location and the Ulu Pandan School would still be thought of with the Kings Road campus as the hub of educational interest;

(5) the swimming pool, which has become an important instructional element of the total program, is more readily available.

(6) the cost of purchasing land for a new facility with a lease arrangement is excessive.

It was reliably reported to me by John Jett[1] that property in the Jurong Town Corporation costs $150 to $350 per square meter. Translated into acres, the cost would be $600,000 to $1,500,000. per acre. A ten acre site could cost the Board as much as $6,000,000 to $15,000,000 for a sixty-year lease. This is government land. Land purchased on the open market is going for $550 per square meter.

The obvious disadvantages are:

(1) the special instructional support areas such as the gymnasium and library, as well as the cafeteria would to varying degrees feel the stress of the anticipated additional students;

(2) the space needed for the new addition would further deplete playspace on an already minimum site;

(3) parking and traffic flow would reach critical proportion;

(4) an addition would result in some loss of design symmetry of the present structure.

The consultant is of the opinion that the alternative to a new building on a separate site has to be considered as a second choice.

If the decision is made to construct an addition at the Ulu Pandan site, it is recommended that it be placed in close proximity to the existing structure. Ideally, the addition would be placed

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[1]John Jett, Construction Company Consultant

on an approximate 20,000 square feet of space located between the circle service drive and adjacent to the playfield. The limited space available would require a three story facility conforming to architectural style and design with the present building. The pattern of pupil traffic would transition into the newly constructed facility addition by means of open walkways at all levels of the two buildings. The location, type, kind, and arrangement of space would be different from that recommended in a new facility on a separate site.

(1) The ground floor would consist of an activity room or an auxiliary gym. Storage for equipment and a minimum of two offices would be included. Also on the ground floor would be two instructional classrooms for the teaching of health and possibly foreign language, or for use as a special purpose room.

(2) The top two floors would house the programs as described for the new facility.

(3) Some physical arrangement in the design of the space would be needed to relieve the cafeteria of what would become an overtaxed area with additional pupils.

Alternative II

This alternative would place the building addition on the open field next to the swimming pool. The single most important advantage of this location versus alternative number one would be to retain the small play space now available for the physical education program. It would also be possible to plan for a different design than the present three story structure.

If alternative number two is not implemented, it is recommended that the field next to the swimming pool be developed as a play area. It will be necessary to erect a fence around the field for the safety of the students.

Alternative III

This alternative would be consideration of the Pei Tong site to construct a new facility. There would be sufficient area to locate a new building but the problem of a limited site size listed under the short-term recommendations would pertain here as well.

If the third alternative was seriously considered for the long-range plan, it is suggested that the existing building be razed and a newly designed building be erected.

Summary

In essence the new facility on a new site, or the alternative recommendations, will serve two major purposes:

(1) Act as a relief valve in adjusting the anticipated crowded conditions at Ulu Pandan.

(2) Assure the American business community that the integrity and quality of education will be maintained by making the present space at Ulu Pandan more productive and appropriate for the program.

With the implementation of the decision to construct a new facility, it is suggested that the Board consider one further recommendation:

(1) Engage the services of program consultants (elementary, secondary) to review the curriculum for pre-kindergarten through grade 12.

(a) Validate the strengths and weaknesses of the curriculum as may be described by the elementary, middle, and high school teaching staff.

(b) Propose recommendations for correcting existing deficiencies and suggest ways to capitalize on positive program elements.

(2) Study staffing patterns and suggest personnel and administrative ratios for the Singapore American School.

(3) Suggest a program of in-service education for the professional staff to include an exploration of developing a program of graduate work for teachers.

(4) Explore the development of a community education program and proposed recommendations to complement the present extended day activities for youth and adults.

Epilogue

The consultant's report is finished. Whether or not any progress results from the observations and recommendations contained throughout the document is a function of the efficiency with which the necessary translation can be made into operational next steps. Much of the energy of the consultant was focused upon identification and reporting those conditions of the facilities and programs which are deemed essential to a program of action for the Board of Governors to consider. Some of the recommendations are mechanical in nature that require little chance for modification. The long-range recommendations contain the potential for productive decisions. They must be viewed in a total perspective. Scattered, disjointed planning efforts and decisions, made to meet only the next problem of enrollment increases as they occur, will only add to the intensity of any void or disfunction now evident.

It is believed that the Board recognizes the full potential of the economic and political stability of Singapore and the important part that American business and industry will continue to contribute to the development of Southeast Asia. You are urged to proceed with the construction of a new facility with the same degree of confidence that I heard expressed numerous times by

individuals when describing the vigor of the present business climate and the continued potential growth in this part of the world.

Finally, The Singapore American School is a potent factor in the scheme of events and should be maintained in a manner consistent with the confidence that American families express when gambling with their children's educational future by moving to Singapore. You, as a Board member, must not fail in your responsibility to provide the best possible program and adequate facilities for these students!

APPENDICES

APPENDIX A

SINGAPORE AMERICAN SCHOOL

Enrollments

School Year	Kings Road	Ulu Pandan	Total
1964-65			406
1965-66			430
1966-67			556
1967-68			675
1968-69			849
1969-70			954
1970-71			1524
1971-72			missing
1972-73			missing
1973-74			missing
1974-75	635	1249	1884
1975-76	605	1334	1939
1976-77	468	983	1451
1977-78	441	724	1165
1978-79	465	899	1364
1979-80	524	1061	1585
1980-81	506	1175	1681
January 6, 1981	519	1176	1695

Comments:

A steady enrollment growth to the peak year in 1975-76.
A low point was reached in 1977-78 and a growth pattern during the next four years.

Source: Administrative Office, Singapore American School.

APPENDIX B

SINGAPORE AMERICAN SCHOOL

Ratio of Students, Kings Road to Ulu Pandan

1974-75 to January 6, 1981

Year	Kings Road	Ulu Pandan	Ratio Percent
1974-75	635	1249	50.%
1975-76	605	1334	45.3
1976-77	468	983	47.6
1977-78	441	724	60.9
1978-79	465	899	51.7
1979-80	524	1061	49.4
1980-81	506	1175	43.0
January 6, 1981	519	1176	44.0

Comments:

The ratio percent of students at Ulu Pandan to the Kings Road high school has remained relatively stable. For every two students at Ulu Pandan there is one at Kings Road high school. Based on this data one could predict the same ratio percentage increase of students at the high school that occurs at Ulu Pandan.

Source: Administrative Office, Singapore American School.

APPENDIX C

SINGAPORE AMERICAN SCHOOL

Suggestions for Developing Educational Specifications

The function of educational specifications for school plant can be reduced to very simple terms. Their job is to facilitate production of school plants which perform well. Nothing more.

What should the specifications contain?

1. Statement as to type of school and its initial and probable ultimate capacity.
2. Description of community background and extent of community use of plant.
3. Description of educational program and of desirable educational and operational techniques in behavioral terms.
4. Who are the people that will be using the facility and how will they use it? What kinds of activity will take place (small and large group, blocks of time or standard equal periods, conference possibilities, etc.)?
5. Description of desired relationships of spaces.
6. Provide close approximations of required areas of all assignable areas.
7. Approximation of gross area of building.
8. General description of performance expectations (environmental controls, ease of maintenance, kinds of materials, safety requirements, etc.)

9. Description of activities (classrooms, laboratories, gym, special areas, etc.) - lists of equipment, special requirements as to size, capacity and relationships between items of equipment, built in and/or portable equipment, illustrations, diagrams and drawings will help the architect to understand what is wanted here.

10. Budget - an awareness of what the total costs are and some knowledge of their allocation - undoubtedly, preliminary planning by the superintendent and his staff, citizens committee and the board of education has resulted in an estimate of total costs for planned building.

Caution

Avoid rigid specifications. Extensive, minute directives as to kind, dimensions and framing of chalkboards, precise room dimensions, exact description of hardware, windowsill and head heights and so forth severely limits the creativity of the architect. The more detailed the specifications, the more likely they are to contain contradictions and the more likely to result in a highly inflexible building. Normally, one would express room size in square feet required rather than a specified dimension.

Example: a language arts classroom would contain 900 square feet (not expressed as 30 x 30).

APPENDIX D

SINGAPORE AMERICAN SCHOOL

School Plant Facilities

Capacity and Utilization

School building capacity is a potential rather than an exact static, or fixed sum. The number of pupils who may be accommodated in a building varies with school policies or procedures concerning grades to be housed, whether or not the building is to operate on shift schedules, number of pupils in classes, size of areas to be provided for each pupil in classrooms, released time, teacher preparations, teacher conferences and consultations, pupil make-up work, out-of-class activity, room size and location, and provision of auxiliary rooms (some systems would count the gymnasium as a teaching station).

Policies may vary from (two reasons)

1. Getting the most pupils through under minimum requirement (platoon - shift schedule, extended days, etc.)

2. Centering attention upon pupil welfare, with scheduling and building provisions directed exclusively toward achieving the best possible product. (most policies will fall between the two extremes).

In the interest of expediency, current surveys of building capacity commonly compute capacities in terms of existing usage.

Appendix B

School Plant Facilities

Building capacity really becomes then a two-phased process:

1. Initially there is established a tentative capacity based on the continuation of the existing plan of usage.

2. Long-range planning with capacity dependent upon future plans of usage.

The determination of the capacity of a building is complicated by the fact that older structures rarely were designed for the programs now in use. In the Singapore American School for example, although there may be enough space for 1300 or more bodies, the space might be inadequate to handle an enrollment of more than 1200 for the kind of program offered.

APPENDIX D_1

Ulu Pandon School Capacity

Grade Level		Recommended	Maximum	Possible Not Recommended	Remarks
Jupiter	(1 & 2)	120	150		
Mercury	(1 & 2)	120	150		Eight Learning
Saturn	(3 & 4)	120	150		Communities with
Neptune	(3 & 4)	120	150		Six Room Each
Beta	(5 & 6)	120	150		
Delta	(5 & 6)	120	150		
Alpha	(7 & 8)	120	150		
Gamma	(7 & 8)	120	150		
Mars					Quonset Huts
Auxiliary					

continued

APPENDIX D_1

Ulu Pandon School Capacity

Grade Level	Recommended	Maximum	Possible Not Recommended	Remarks
Instructional Areas				
Phi, (Home Living Art, Health, Mandarin)			100	Four spaces could be used for a home base for students
Library				
Administration & Guidance				
Gym			50	Instructional station
Theaterette			50	Pre-kindergarten or grade over-flow
Cafeteria				

continued

APPENDIX D_1

Ulu Pandon School Capacity

Grade Level	Recommended	Maximum	Possible Not Recommended	Remarks
Music Rooms				
Staff Lounge				
Educational-Custodial Storage				
Toilets, Circulation Space				
TOTAL CAPACITY	960	1200	1400	

Notes:

1. The recommended ideal capacity to fit the present educational philosophy and program goals is 960 pupils. An additional forty students to accommodate temporary enrollment fluctuations would not cause undue stress.

2. The recommended maximum capacity could be accommodated in this facility without undue strain on auxiliary instructional areas and support services, such as the cafeteria.

3. The building could house as many as 1400 students but this is not recommended. Program would suffer; flexibility of scheduling would be limited; support service areas would be greatly over extended. The extreme would be double sessions scheduled in an extended day program.